The Cloud Network Module provides multiple communication channels that can be used by controllers or other devices. Add a cloud network Wi-Fi, Ethernet or cellular channel to your BaseStation irrigation controller, SubStation or FlowStation to enable reliable remote connectivity. Baseline’s Cloud Network Module has the following technical specifications.

### 4G LTE Cellular Modem

<table>
<thead>
<tr>
<th>WWAN LTE</th>
<th>Supported frequency bands</th>
<th>5G LTE supported frequencies:  S700/800/850/900/1800/1900/2100/2600 AWS (B1, 2, 3, 4, 5, 7, 8, 13, 17, 18, 19, 20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum connectivity speed</td>
<td>100 Mbps down, 50 Mbps up (Cat 3)</td>
<td>Theoretical LTE data rates</td>
</tr>
</tbody>
</table>

**Supported 3G frequency bands**
- UMTS/HSDPA/HSUPA/HSPA+: 850/900/1900/2100 MHz and AWS band (1700/2100 MHz) (B 1, 2, 4, 5, 8)

**Supported 2G frequency bands**
- GSM/GPRS/EDGE: 850/900/1800/1900 MHz

<table>
<thead>
<tr>
<th>WWAN 3G/2G</th>
<th>Maximum connectivity speed</th>
<th>DC-HSPA+: 42 Mbps (Cat 24) down and 5.76 Mbps (Cat 6) up</th>
</tr>
</thead>
<tbody>
<tr>
<td>RX diversity</td>
<td>Simultaneous Equalization and Rx Diversity on all bands</td>
<td></td>
</tr>
</tbody>
</table>

**WWAN Antenna**
- Antenna connectors
  - 1 x SMA: WWAN Main
  - 1 x SMA: WWAN Div/GPS

**Ethernet (IEEE 802.3)**
- 10/100Mb/s RJ45 Connector

**Visual Indicators**
- Seven 3 color LEDs showing system status and signal strength

**SIM**
- USIM/SIM class B and class C
### Case

| Dimensions       | 6.5" L x 3.8" W x 0.25" D  
|                 | 165mm W x 96.5mm L x 6.3mm D  
|                 | (excluding antenna connectors)  |
| Mounting         | Plastic mounting plate with 3 mounting holes |

### Environmentals

| Operating temperature: | -22° to +158° F  
|                         | -30° to +70°C  |
| Storage temperature:   | -40° to +185° F  
|                         | -40° to +85°C  |
| Humidity operational:  | 5% - 95% non condensing |

### Standards Compliance

| ROHS, Reach |

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### Power & Communication

Power is supplied to the Cloud Network Module using the Comm2 serial port on the BaseStation 3200, BaseStation 1000, or SubStation control board.

The controller and Cloud Network Module communicate over a 5-pin serial cable.

The Cloud Network Module is configured through the irrigation controller’s interface.

DC Power In: 9-33 V DC  
Current Consumption: 341mA (measured at 12V DC)

### Network

Cell modems operate on a wireless carrier’s network. Baseline provides the SIM card from the wireless carrier.

### Security

The cell modem uses one of the following ciphers for encryption:

- 128-EEA2 AES based algorithm

If the cell modem is on Baseline’s private network, there is additional encryption (AES 128-GCM) between the wireless carrier’s network and the Baseline server.
Compatible BaseStation Firmware

The following firmware versions have integrated support for 3G cell modem communication:

- **BaseStation 1000:** Version 1.25 and higher
- **BaseStation 3200:** Version 17.12 and higher
- **FlowStation:** Version 3.5 and higher
- **SubStation:** Version 2.3 and higher

Compatible BaseStation Hardware

- **BaseStation 1000:** All controllers in X cabinets and pedestal (P) enclosures
- **BaseStation 3200:** Controllers in X cabinets and pedestal (P) enclosures shipped after April 16, 2014

2.4GHz Wi-Fi

Add a Wi-Fi communication module to your Baseline controller to enable reliable wireless connectivity. The Wi-Fi module sends and receives data over an existing Wi-Fi network at your site. Baseline’s Wi-Fi modules for the Cloud Network Module have the following technical specifications.

**Module Description**

2.4 GHz IEEE 802.11b/g™

**Security**

- Supports 802.1x, 802.1i security
- WEP
- WPA-PSK
- WPA-2-PSK

**Network Interface**

- IEEE 802.11 - compliant RF transceiver
- Compatible with IEEE 802.11b/g/n networks

**RF/Analog Features**

- ISM Band 2.400 to 2.484 GHz operation
- Channels 1-11
- DSSS/OFDM modulation
- Application throughput: approximately 1125 kbps
- Integrated low phase noise VCO, RF frequency synthesizer, PLL loop filter, and PA
- Integrated RSSI ADC and I/Q DACs, RSSI readings available to host

**Current Consumption**

- -95 dBm Typical sensitivity at 1 Mbps
- +18 dBm Typical 802.11b TX power with control
- +16 dBm Typical 802.11g TX power with control
Power Requirements
Single operating voltage: 2.8V to 3.6V (3.3V typical)

Environment
Operating: -40° C to +85° C (-40° F to +185° F)
Storage: -40° C to +125° C (-40° F to +257° F)

General Information
Dimensions (LxW): 6.4 x 3.8 in (163 x 97 mm)
Antenna Connector: Ultra-miniature coaxial (U.FL)
Certifications: Radio regulation certification for United States (FCC), Canada (IC), and Europe (ETSI)

How to Specify
4G LTE CELL MODEM
- BL-CLOUD-LTE-AT-X
- BL-CLOUD-LTE-VZ-X
- BL-CLOUD-LTE-AT-P
- BL-CLOUD-LTE-VZ-P
- BL-CLOUD-LTE-AT-PSS
- BL-CLOUD-LTE-VZ-PSS

2.4 GHz WI-FI
- BL-CLOUD-WFE-X
- BL-CLOUD-WFE-P
- BL-CLOUD-WFE-PSS

ETHERNET RADIO
- BL-ER-X
- BL-ER-P